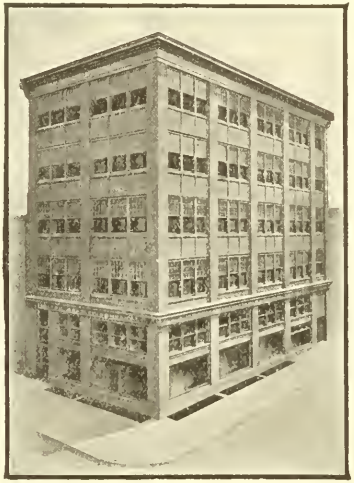
CARDBOARD
CONSTRUCTION.
Plate System.
J.L.Noll



Announcement

AT THE CORNER OF ARCH AND SEVENTEENTH STREETS in our own new five story building, you will find the Philadelphia Office of Milton Bradley Company.

Here you will be welcome at any and all times, and we sincerely invite you to call and enjoy the special conveniences which we have provided for your comfort.

One section of our office is tastefully furnished as a rest room and meeting place for visiting teachers.

We want you to feel at home here, to come in and write your letters, to make this the appointed place to meet your friends; and incidently to renew your acquaintance with the Bradley School Materials the success of which has made our new home possible and necessary.

The arrangement of our display room will appeal to you and you will find new interests every time you call in the materials, devices and books constantly added to the Bradley Line.

This new building is a fitting tribute to the quality of Bradley products and the service which we have rendered to the educational field in this section since the opening of our Philadelphia office seventeen years ago.

The quality of Bradley goods will be maintained, and our improved facilities assure maximum service with prompt and careful attention to all your needs.

MILTON BRADLEY COMPANY

L. L. NARAMORE, MANAGER

South East Corner Arch and Seventeenth Streets PHILADELPHIA, PA.

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CARDBOARD CONSTRUCTION PLATE SYSTEM

J. L. NOLL, SUPERVISOR MANUAL TRAINING
ALTOONA PUBLIC SCHOOLS

LP15.5
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PREFACE

THIS collection of plates was designed to furnish practical and educational instruction of an interesting character for children. That they have met with approval is evidenced by the numerous requests for them by teachers and parents. It is this fact that has induced me to make a collection of the plates pertaining to cardboard construction, to arrange them in progressive order, and to publish them for distribution.

The classification of the subject mentioned in the collection named "Plate System," is derived from the fact that all the necessary information for construction, is given on the plate containing the object to be constructed. This plan is most convenient as well as being the correct shop practice.

J. L. NOLL, ALTOONA, PA.

General Information

IN taking up this work in the schools, it will not be necessary to invest in expensive equipment, as all the tools really needed to do good work are shown on the cover page and are as follows: Twelve inch Rule, graduated to sixteenth of an inch; No. H. Drawing Pencil; Compasses and a forty-five degree Triangle. The latter may be made by the pupil or may be dispensed with, and measurements used to find the right-angle.

The first few plates are composed of principles employed in mechanical drawing; they should be drawn on drawing paper carefully arranged and the information nicely printed. A sample plate is shown in this collection in the presentation of a six pointed star. These objects should be re-drawn on plain cardboard and cut to the line with scissors.

Printing is given on one of the plates, and it is well to have a lesson frequently. Printing is always used in mechanical drawing, and so it should receive enough attention to insure good lettering.

All plans of the objects shown in this course, where dimensions are given, should be drawn on drawing paper and corrected by the teacher, then re-drawn on the construction paper and inspected again before cutting. The perspective drawings are shown to assist in visualizing the operations in construction, and to show the finished object, and are not intended for drawing lessons.

The material used in this course is Herculean paper. It is a good grade, and very suitable for cardboard construction. It is made in many colors, and several weights, and is the material used for the cover of this book. Plate No. 4028 in this collection gives more detail about Herculean paper.

Good glue should be used in constructing these objects, and may be obtained in convenient tubes at any stationary or drug store, In using glue however, it should be spread evenly with a stick and not much used. Ordinary paste will not give good results.

Decorations may be used if desired, and may be done in water color or crayola; but many of of the objects will look better if they are not decorated. The teacher should use some judgment about this.

In presenting this work to the pupils the teacher should explain all the tools and materials, how to use them, also neatness, accuracy and economy.

The best way to direct the work is from the board working right with the pupils, and the teacher should make all the drawings properly proportioned, so as not to misguide the young mind.

All the information for construction, description and material will be found on each plate, and if it is carefully followed success will surely result.

MECHANICAL LETTERING.

ABCDEFGHIJKLMNOPQRSTUVWXYZ&.

1234567890 1/2 1/4 PLATE NO. 2354.

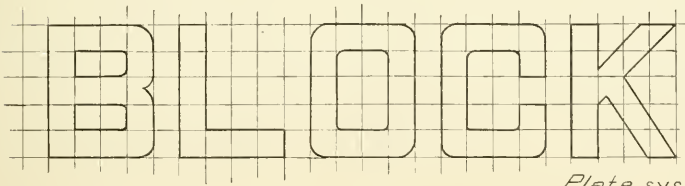
Draw above between lines ¼ apart. For straight lines use ruler, curves free hand.

ABCDEFGHIJKLMNOPQRSTUVWXYZ&.

CAPITAL. abcdefghijklmnopqrstuvwxyz etc.

1234567890 B.O MECHANIC. Alpha

This group is shop skeleton, slant 30°. B.O shows how equal division lines help.



These letters are much used. Practice as the directions show.

Plate system. No 4020 by J.L.Noll.

CARDBOARD CONSTRUCTION

HEAVY STRAIGHT LINE

LIGHT STRAIGHT LINE

DOTTED LINE

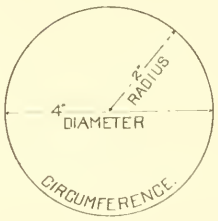
DIMENSION LINE

CURVED LINE

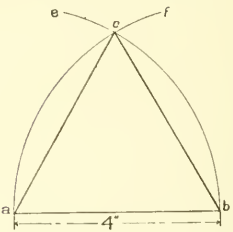
CENTER LINE

FOOT SIGN' INCH SIGN"

CIRCLE.



EQUILATERAL TRIANGLE.



Cardboard construction is a kind of work most children enjoy, and while thus employed, will acquire dexterity, the ability to illustrate, and to make plans requiring judgment and accuracy.

The first work on this plate consists of lines and symbols used in mechanical drawing. Carefully draw these and learn their use.

Heavy lines are used to represent visible parts of an object, and cutting lines in cardboard construction.

Light lines are used for the purpose of constructing the object. Ex. a-f and b-c, in equilateral triangle.

Dotted lines are used for projection, to represent hidden parts of an object, and to indicate folding lines in paper work, or cardboard construction.

Dimension lines are used to show position of measurements. The curved line is shown to acquaint the pupil with its appearance.

Center lines are used to show center of object, from which dimensions may be taken.

Foot and Inch signs are used thus, 4'6" means four feet six inches.

Before drawing is begun, drill on the foot rule, and its divisions. Good printing is necessary. See plate, No 4020.

To draw a circle. Set compasses to the radius, hold handle between first and second finger and thumb, place point on position desired for center, and, pressing lightly, make complete turn with pencil point. Learn the parts of circle described, and construct it of cardboard.

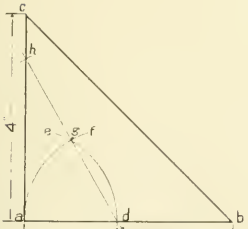
Equilateral triangle. Draw a-b, with a-b as radius, a as center draw curve arc b-e, then with b as center, draw arc a-f, connect a, and point of intersection c, with a straight line, likewise b and c.

Note. Use good pencils, and keep well sharpened.

Plate system, No 4024 by J.L. Noll.

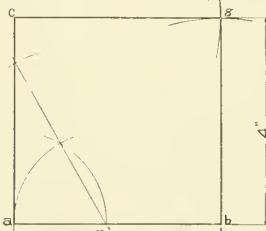
CARDBOARD CONSTRUCTION.

4 RIGHTANGLE TRIANGLE.



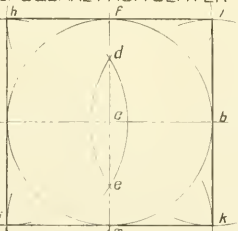
Right triangle. Draw base a-b 4 long. With a as center draw arc d-e, from d draw arc a-f, from e draw arc h. Draw line d-e-h. Draw a thru h, find c to b completes fig.

5. SQUARE-FROM BASE.



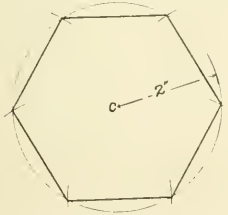
To draw square, base line given, proceed as in right triangle, then with a-b as radius, b as center draw arc e, from c draw e. Connect c-e-b.

6. SQUARE-FROM CENTER



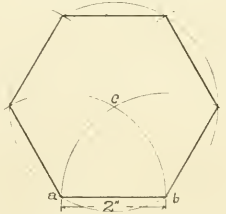
To draw square about center c. Draw line a-b thru c. With radius ½ the side of square, draw circle. With a-b as centers any radius, draw arcs d-e, draw line thru d-c-e extending to f-g. With radius of circle, a-f-b-g as centers, draw arcs h-i-j-k and connect with straight lines.

7. HEXAGON-FROM CENTER.



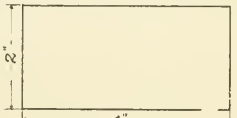
Draw circle with radius given, then make six steps on circle and connect with straight lines, forming hexagon.

8. HEXAGON-FROM BASE.



With a-b as radius, a-b as centers draw arcs to find center c, then from a step around circle.

9. RECTANGLE.



Draw rectangle to given dimensions.

Note. Construct objects of cardboard.

Plate system No 4025 by J. L. Noll.

CARDBOARD CONSTRUCTION.

Plan of layins out plate for drawins Paper 6x9"

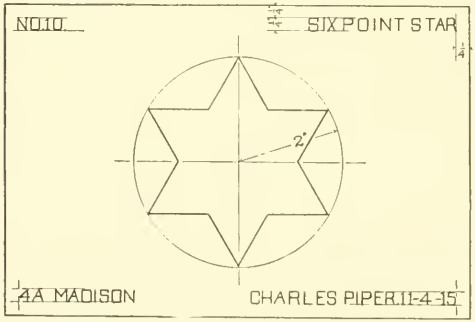
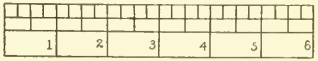


Plate drawins. The above is an example that may be used in primary work. The object is constructed from the center of the paper, located by the intersection of horizontal and vertical lines, drawn parallel to edges, half distance across the paper.

13. RULE

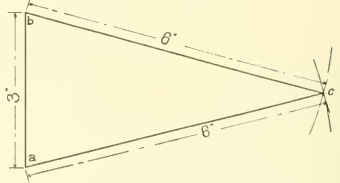


Draw the rule 6" lons 1" wide, then divide top and bottom lines into six equal spaces, draw lines, and drill on inches.

Draw the horizontal line, half distance from top and bottom, divide the inch spaces Then divide again as shown.

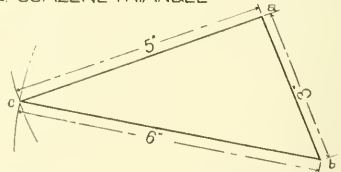
Construct all objects of cardboard.

11. ISOSCELES TRIANGLE.



When two sides only, of a triansle are equal in lensth, it is called isosceles. Draw line a-b, then with the compasses set 6", a and b centers, draw arcs at c. Draw lines a-c and b-c.

12. SCALENE TRIANGLE

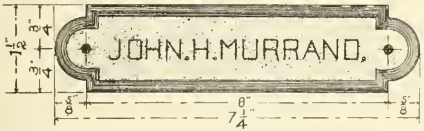


When each side of a triansle is a different lensth, it is called scalene. Set compasses 5, a as center draw arc c, then with 6" radius, b as center, draw arc c; then connect a-c and b-c.

Plate system. Nº 4026 by J.L.Noll.

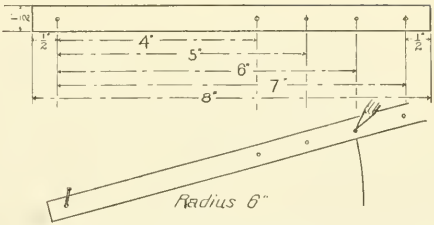
CARDBOARD CONSTRUCTION.

14. NAME PLATE.



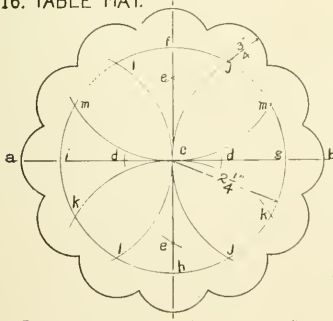
To draw name plate, construct rectangle 1½" × 6". Draw a center line the long way, then from points of intersection, with 5" radius, draw semi-circles.
The above may be made of - Herculean paper #70. and decorated with border, as shown.

15. CIRCLE MAKER.



The top view shows plan, and the lower view application of a circle maker. Draw and construct.

16. TABLE MAT.



To draw mat, draw horizontal line a-b, then with c as center make arcs d-d. With d-d as centers, make arcs e-e, and draw the perpendicular line e-c-e.
Draw circle 2¼" radius, then with same radius, from f-g-h-i draw arcs j-j, k-k, l-l, m-m.
Set the compasses ¼", which is one third radius of circle, then from points of intersection on circle, draw border arcs.

Construct of - Herculean paper #70. Size required 6¼" × 6¼"

17 SHIPPING TAG.

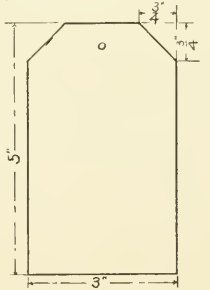
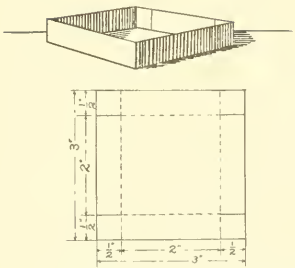


Plate system. N° 4027, by J.L. Noll.

CARDBOARD CONSTRUCTION.

18. SQUARE TRAY.



The object here shown consists of a square and four rectangles sojoined as to form a tray, or box bottom.

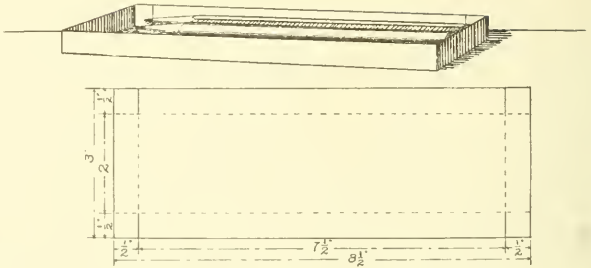
** To draw an object centrally on paper of a given size, deduct extreme dimensions from size of paper, and half the remainder will be distance from margin of paper to object.*

The tray should be made of number 120 herculean paper; size of material required, about 3½ x 3½

In writing dimensions, x stands for by, thus. 3½ x 3½ means 3½" by 3½"

DIMENSION ——— ——
FOLDING - - - - -
CUTTING ———

19. RECTANGULAR TRAY.



*This object is a combination of rectangles. Draw plan, then construct of herculean paper *120 · 3" x 9½"*

INFORMATION.

Always make working drawings of objects to be constructed.

If drawing paper will not permit full size drawing, draw the object half size, but mark dimensions desired.

*Herculean paper is a good grade for construction work. It is made in many colors and weights. Number 120 means 120 lbs to the ream, 70 would be lighter etc. Her. stands for herculean, and * stands for number. Thus. Her *120. 3" x 9½"*

When joint flaps are shown, they are to be pasted, unless otherwise marked.

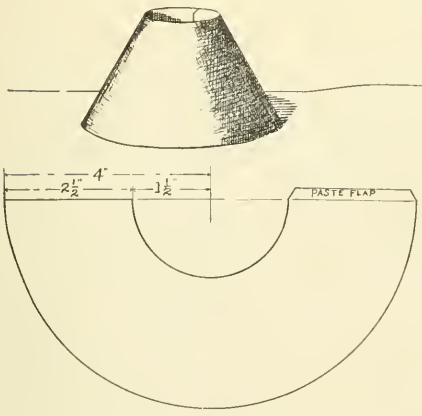
The pencils in the rectangular tray suggests utility.

** See in directions *18. This rule applies when a drawing is started from one of its sides.*

Plate system No 4028 by J. L. Noll

CARDBOARD CONSTRUCTION.

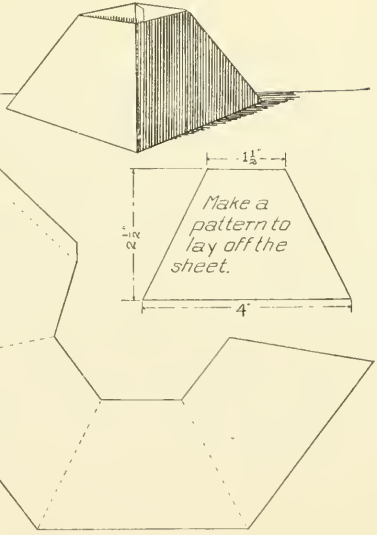
20. ROUND CANDLE SHADE.



The surface of a cone, when diam of base and altitude are equal, is constructed from a semi-circular sheet, radius equal diam of the cone base

*To construct candle shade. Draw line 8" long, from center with 4" radius draw large circle, then with 1½" radius draw small circle. Allow paste flap. Material Her *70- 5"x8½"*

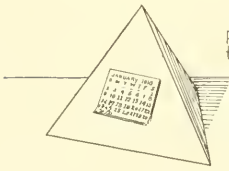
21. SQUARE CANDLE SHADE.



*Construct of Her *120 1"x9" Plate system No 4029 by J.L. Holl.*

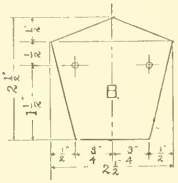
CARDBOARD CONSTRUCTION.

22. TRIANGULAR PYRAMID.



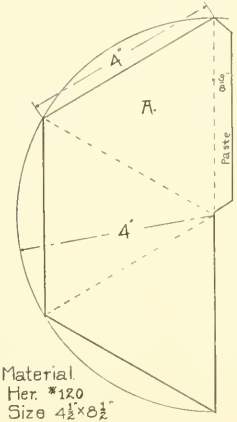
To construct, make plan as shown in A, then fold and paste.

Construction ——
Center — · —
Dimension ·——→
Cutting ——
Folding - - - -

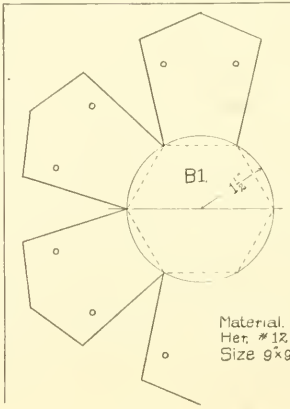


To make the basket shown, make pattern B, then draw in center of construction paper a hexagon as shown in B1, then place pattern as drawing shows, and lay out the entire plan.

Fold to form basket, paste in ½" strip of paper for handle and lace together with twine.



Material.
Her. #120
Size 4½"×8½"



Material.
Her. #120
Size 9"×9"

23.

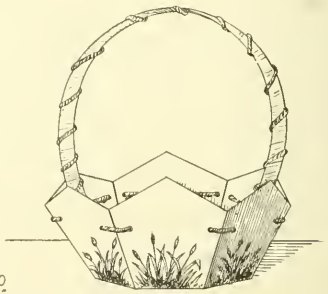
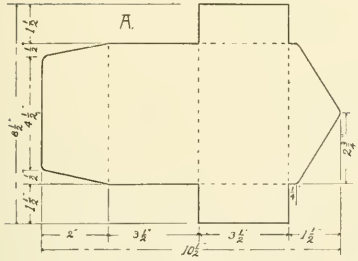


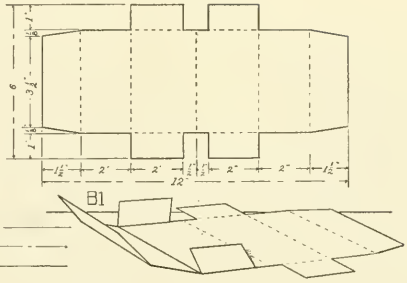
Plate system. №4031 by J.L.Noll.

CARDBOARD CONSTRUCTION.

24. ENVELOPE.



25. CARD CASE.



Construction ——
Dimension ←——→
Cuttins ——
Foldins - - - -

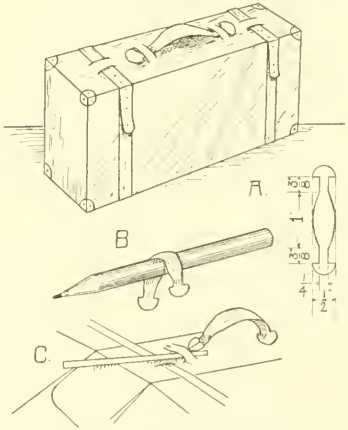
Material Her*70.
A 9"×11"
B 6"×12½"

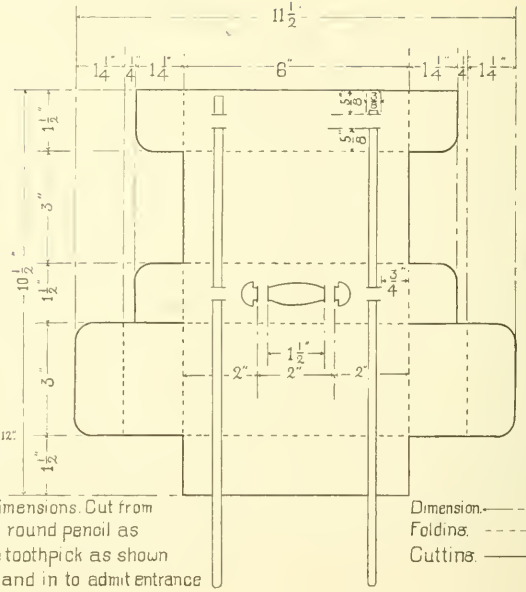
Make drawins as shown in general plan A, then assemble in order, as numbered. No paste required.

To construct B, follow same directions as given in A.

Plate system №4032 by J.L.Noll.

CARDBOARD CONSTRUCTION.





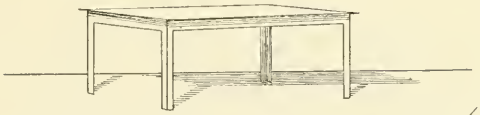
Material. Herculean paper 120 lbs. wt. any color, 12x12".

Directions-Cut two strips of paper ¼" wide for straps. On remainder of sheet lay off outer dimensions of general plan, then locate inner dimensions. Cut from scraps handle as shown in A. Bend about round pencil as shown in B. Raise straps to enter parts with toothpick as shown in C, which shows ears on handle turned up and in to admit entrance

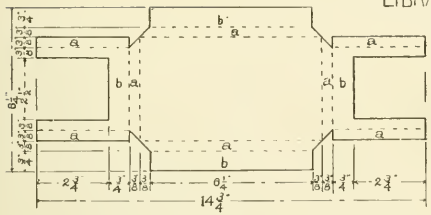
Assemble all parts and fold. No paste required.

Plate system No. 4050 by J.L Noll

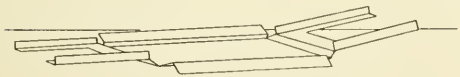
CARDBOARD CONSTRUCTION.



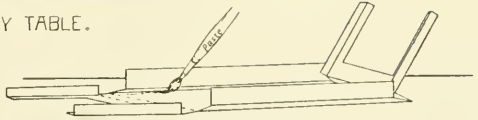
LIBRARY TABLE.



1. General plan. Make drawing and see that all dimensions are correctly made and stated, then draw (lay off) on construction material. After object is cut out, score dotted lines, bend flaps marked a up, those marked b down.



2. Shows how object should appear after directions on plan 1. have been completed.



3. Further development of object.

4. Press down firmly and hold until paste sets.

Construction. ———————

Dimension. ——·——·——

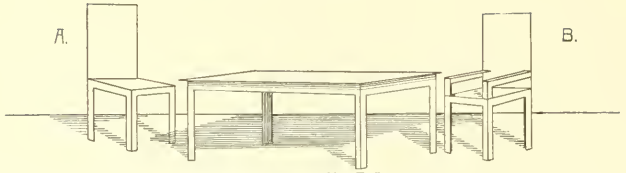
Cutting ———————

Folding - - - - - - - - - - - -

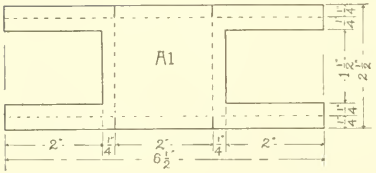
Material. Her. #120 Size 7"x15".

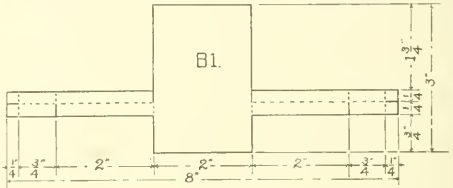
Plate system. № 4052 by J.L. Noll.

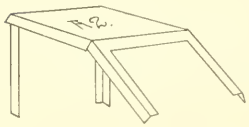
CARDBOARD CONSTRUCTION.

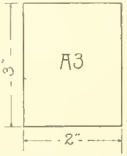


LIBRARY FURNITURE.



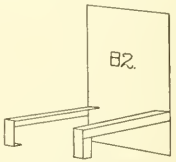






Construction
Dimension
Cuttins
Foldins

Material. Her № 120.
A. 5"x7"
B $5\frac{1}{2}" \times 8\frac{1}{2}"$



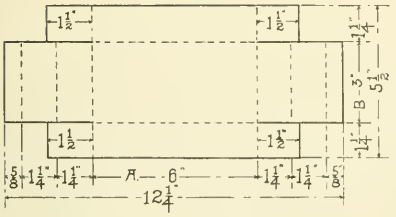
Draw plan as shown in A1, then lay off on the construction paper, cut out and fold as shown in A2. A3 shows plan of back, which is pasted to bottom as shown in A.

To make arm chair B, bottom is same as in A. B1 shows plan of back and arms, and B2 shows back and arms ready to paste to bottom.

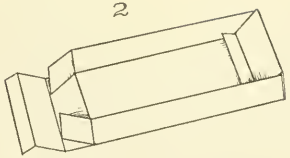
Note. For construction of table, see Plate № 4052. Plate system. № 4053. by J.L.Noll.

CARDBOARD CONSTRUCTION.

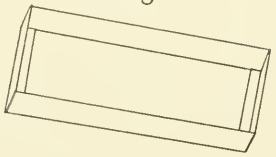
1



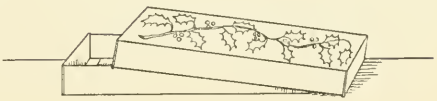
2



3



4



Make drawing as shown in plan Nº 1.

Nº 2 and 3 show progressive stages of development in construction.

Nº 4 shows box and lid, with decoration suggested. Dimension A and B on general plan should be increased ⅛ to make lid.

Material. 2 pieces Herculean paper, 120 lbs wt. size 6"x12½".

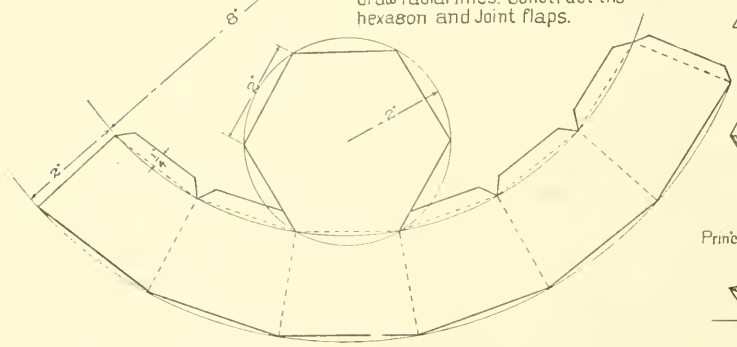
Dimension. ——— ———
Folding. - - - - - - -
Cutting. ———

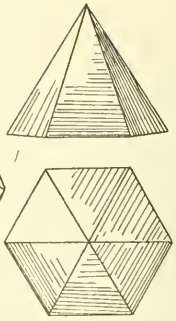
Plate system Nº 5040. by J.L. Noll.

CARDBOARD CONSTRUCTION.

Dimension ←·→
Folding. ----------
Cutting. ——————

Make drawing of construction plan half size, or to suit uniform size of drawing plates.
Draw the two large circles with radius shown, then point off equal spaces on inner circle and draw radial lines. Construct the hexagon and Joint flaps.





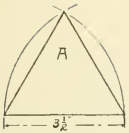
Principle Hexagonal Pyramid.

Hexagonal Slant Tray.

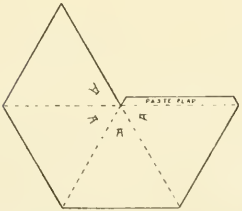
Material to be used, should be Herculean paper 120 lbs. wt. Size 9"x14".
Paste flaps on outside of bottom, and inside of rim.

Plate system No. 6060. by J.L. Noll,

CARDBOARD CONSTRUCTION.
LANTERN.

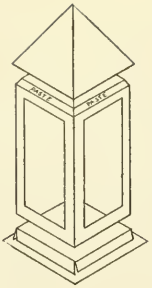


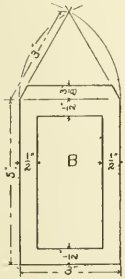
Make pattern thus

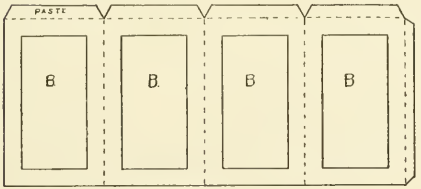


With A. lay off sheet thus

This view shows the parts ready to be assembled
Apply paste on flaps of center piece, then press cap on firmly, and hold until set.
The base is so constructed that it is re-movable.

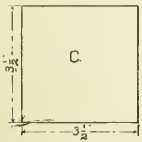




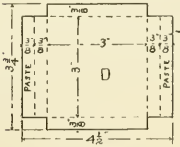


With pattern B. lay off sheet thus.

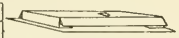
Cuttins ——
Foldins - - - -
Dimension ←——→



Base Plate.



Base Clasp.


Method of assemblins Base Clasp

Material Her #120
R.B.C. 13"x13½"
O. 4"x5"

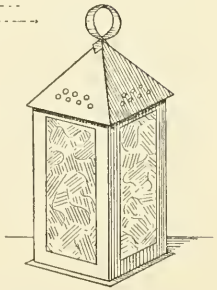
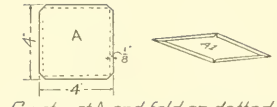


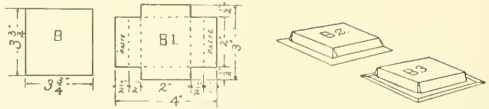
Plate system N° 5065 by J.L. Noll.

CARDBOARD CONSTRUCTION.

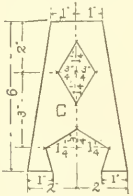
TABOURET.

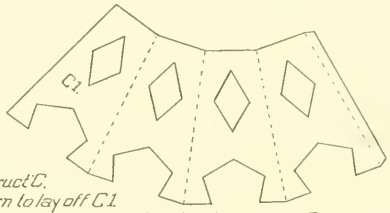


Construct A and fold on dotted lines, as shown in A1

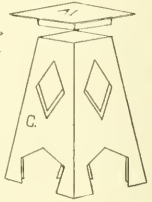


Cut out B then construct B1 and paste on B as shown in B2. Fold B2 inside the flaps of A1, as shown in B3.

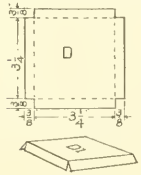




Dimension
Folding.
Center.
Cutting.



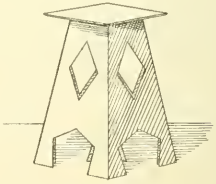
Draw and construct C, and use for pattern to lay off C1.
Note dimensions taken from center line in pattern C.



Material Her. #120, 12"×16"

Note.

Make drawings of A, B, B1, C, and D. Then make pattern of C, and lay out parts on sheet, and proceed to construct.

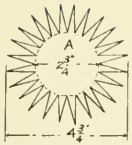


D Plan of center brace. D1 Creased ready to use. D3 How adjusted inside the tabouret

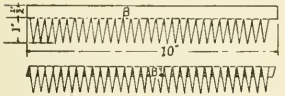
Plate system. № 5067. by J.L. Noll.

CARDBOARD CONSTRUCTION.

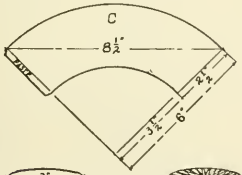
FLOWER POT.



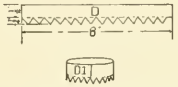
Make A of brown paper, and fold like A1.



Make B, and fold as shown in B1.



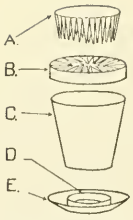
Construct C, and paste as shown in C1.
Adjust B as shown in C2, mark at O, remove and paste.



Make D, then adjust to fit small end of C1, mark, remove, and paste

Make E, then adjust to fit D1 as shown. Mark E1, remove and paste.

Paste D1 on under side of E1 as shown in E2.



Parts ready to be assembled.

Cutting ———
Folding - - - - - -
Dimension — · —

This object is very pretty, and is not hard to make if directions are followed.

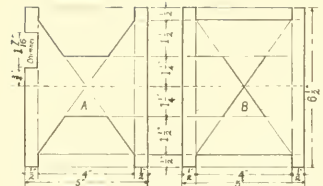
Start at A, and make each piece as directed.

Material Her. #1120
1- Brown 5"×5"
1- Red 10"×11"

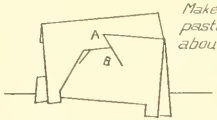
Plate system N°5069 by J.L. Noll.

CARDBOARD CONSTRUCTION.

BUNGALOW.

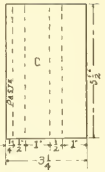


Roof Plan Draw and construct. A and B

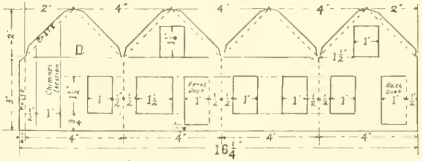


Make all paste flaps about ¼" wide

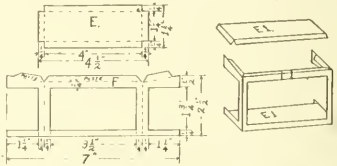
Fold A and B on dotted lines, then insert A in slots in B as shown, press to bottom, and join corners



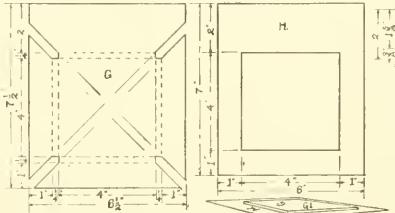
C. Plan of chimney C1 Chimney finished



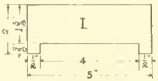
Draw and construct elevation as shown in D Erect as shown in D1



E. Porch floor plan. E1 Floor finished
F. Porch elevation plan, F1 adjusted to E1.



Draw and construct G and H. Fold G and press thru H as shown in G1, then paste. This forms base seat.



I Porch roof plan.

Dimension
Construction
Folding
Cutting

Material Her. #120. Two colors
For A, B, C and I, Color a 12"×12"
For D, E, F, G and H, Color b 15"×17"

Make each part as lettered. Measurements are simple, and the construction lines will help

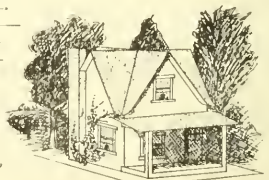
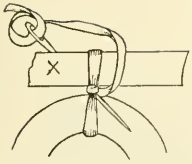


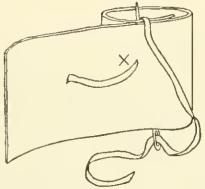
Plate system. N° 5080. by J. L. Noll.

RAFFIA WRAPPED ON CARDBOARD.

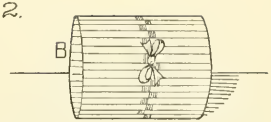


1.

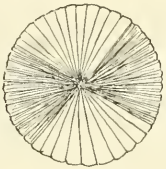
Note. Use № 18 Tapestry needle.

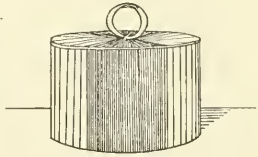


2.



3.





№ 1. Shows how to make a picture frame, using cardboard or oak tag paper as a base. Take as many ply as required to make frame firm. Plain or fringe border may be made, a plan of the latter is shown. X is a gauge made of cardboard, to regulate loops, which are cut open after knot is made. B shows a section of frame completed.

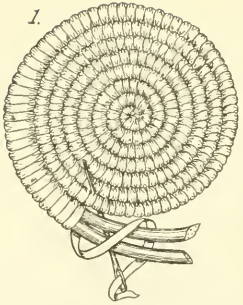
№ 2. Roll strip of cardboard to form hollow cylinder, insert needle with strand of raffia as shown at X, and continue to wrap until covered, then take colored strands of raffia and make band, as shown in B.

№ 3. Box. Sew bottom, and hinge lid with fine strand of raffia.

Plate system № 2500. by J. L. Noll.

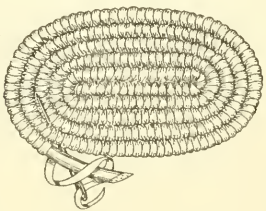
BASKETRY - RAFFIA AND RATTAN.

1.



For large baskets double rattan may be used on bottoms as shown.

2.

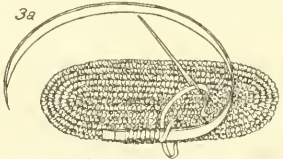


The oval shape basket bottom started.

3.

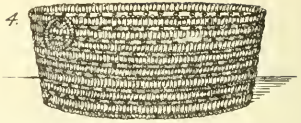
Flat rattan rims, for basket sides.

3a



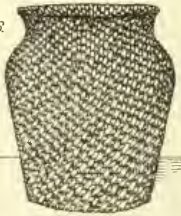
How to start side, on oval shape bottom.

4.



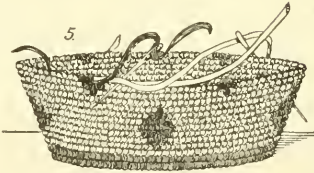
Finished in flat rattan, knot stitch.

6.



Try this in lazy squaw stitch.

5.



Design work. Carry the two colors as shown, wrap over alternately as design stitches require.

Note: The use of flat rattan here, is shown in rims; as a spiral always appears to lean.

Plate system. Nº 3006. by J.L. Noll.

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